

Permit Application Review Summary

Application No.: Significant Modification Application No. 0088-25

Permit No.: Covered Source Permit (CSP) No. 0088-03-C

Applicant: Chevron Products Company

Facility Title: One (1) 350 kW Black Start Diesel Engine Generator
and Three (3) Diesel Engine Pumps
Located At: 91-480 Malakole Street, Kapolei, Oahu

Mailing Address: Chevron Products Company
91-480 Malakole Street
Kapolei, Hawaii 96707

Responsible Official: Mr. Jon Mauer
Refinery Manager
Chevron Products Company
Phone: (808) 682-5711

Point of Contact: Mr. Marcus Ruscio
Environmental Specialist
Chevron Products Company
Phone: (808) 682-2282

Application Dates: April 30, 2015, and additional information dated March 16, 2016

Proposed Project:

SICC 2911 (Petroleum Refining)

Chevron Products Company is applying for a Significant Modification to a Covered Source Permit. Chevron proposes to install and operate three (3) diesel engine pumps. The permit modification application fee of \$1000.00 for a significant modification was submitted by the applicant and processed.

Equipment Description:

Three (3) diesel engine pumps consisting of the following:

- a. One (1) Sand Filter Pump No. 1, Tier 3 or higher rated, not to exceed 175 hp, serial number PE4045L152363;
- b. One (1) Sand Filter Pump No. 2, Tier 3 or higher rated, not to exceed 175 hp, serial number PE4045R951353; and
- c. One (1) Transfer Pump, Tier 3 or higher rated, not to exceed 175 hp, serial number PE4024R039307.

The sand filter pumps no. 1 and no. 2 routes treated wastewater in the refinery's Effluent Treating Plant through sand filters as needed for water quality compliance. Sand filter pump no. 1 alternates with sand filter pump no. 2 during normal operation.

The transfer pump routes skim oil and/or wastewater from the refinery's Effluent Treating Plant to tankage in the Blending and Shipping Area.

Due to the portability of these units, the sand filter pumps no. 1 and no. 2 and transfer pump may be replaced with an equivalent unit as necessary while maintenance or reliability activities are performed on the pumps.

Air Pollution Controls:

The three (3) diesel engine pumps burns only ultra-low sulfur diesel no. 2 with a maximum sulfur content of 0.0015% by weight to control SO₂ emissions.

Applicable Requirements:

Hawaii Administrative Rules (HAR)

Title 11, Chapter 59	Ambient Air Quality Standards
Title 11, Chapter 60.1	Air Pollution Control
Subchapter 1	General Requirements
Subchapter 2	General Prohibition
HAR 11-60.1-31	Applicability
HAR 11-60.1-32	Visible Emissions
HAR 11-60.1-38	Sulfur Oxides from Fuel Combustion
Subchapter 5	Covered Sources
Subchapter 6	Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
HAR 11-60.1-111	Definitions
HAR 11-60.1-112	General Fee Provisions for Covered Sources
HAR 11-60.1-113	Application Fees for Covered Sources
HAR 11-60.1-114	Annual Fees for Covered Sources
HAR 11-60.1-115	Basis of Annual Fees for Covered Sources
Subchapter 8	Standards of Performance for Stationary Sources
HAR 11.60.1-161	New Source Performance Standards
Subchapter 9	Hazardous Air Pollutant Sources
HAR 11.60.1-174	Maximum Achievable Control Technology (MACT) Emission Standards

Federal Requirements

40 Code of Federal Regulations (CFR) Part 60 - Standards of Performance for New Stationary Sources (NSPS)

40 CFR Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. NSPS Subpart IIII applies to stationary CI internal combustion engines that commence construction (date engine ordered) after July 11, 2005, and manufactured after April 1, 2006.

40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technologies (MACT) Standards)

40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. (RICE NESHAP). This MACT standard applies since these are stationary reciprocating internal combustion engines equal to or less than 500 hp located at a major source of HAPs that commenced construction on or after June 12, 2006. These are considered to be new stationary RICE. An affected source must meet the requirements of this part by meeting the requirements of 40 CFR Part 60, Subpart IIII, for compression ignition engines. No further requirements apply for such engines under this part.

Non-Applicable Requirements:

Hawaii Administrative Rules (HAR)

Title 11, Chapter 60.1	Air Pollution Control
Subchapter 7	Prevention of Significant Deterioration Review
Subchapter 9	Hazardous Air Pollutant Sources
HAR 11.60.1-180	National Emission Standards for Hazardous Air Pollutants

Federal Requirements

40 CFR Part 52.21 - Prevention of Significant Deterioration of Air Quality
 40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants (NESHAPS)

Best Available Control Technology (BACT):

A Best Available Control Technology (BACT) analysis is applicable only to new covered sources and significant modifications to covered sources that have the potential to emit or increase emissions above significant levels as defined in HAR §11-60.1-1. The project emissions for the three (3) diesel engine pumps are below the significant levels. Therefore, a BACT analysis is not applicable.

Pollutant	Potential Emissions (tpy)	Significant Level (tpy)	Significant?
NO _x	15.21	40	no
SO _x	0.03	40	no
CO	18.75	100	no
PM	1.12	25	no
PM ₁₀	1.12	15	no
PM _{2.5}	1.12	10	no
VOC	17.28	40	no
Lead	0	0.6	no
CO ₂ e	3,022.2	75,000	no

Prevention of Significant Deterioration (PSD):

A PSD major modification is defined as a project at an existing major stationary source that will result in a significant emissions increase and a significant net emissions increase of any regulated NSR pollutant as defined in 40 CFR §52.21. Since there are no significant emission increases for this project, PSD is not triggered.

Air Emissions Reporting Requirements (AERR):

40 CFR Part 51, Subpart A – Air Emissions Reporting Requirements, is based on the emissions of criteria air pollutants from Type A and B point sources (as defined in 40 CFR Part 51, Subpart A), that emit at the AERR triggering levels as shown in the table below:

Pollutant	Type A Triggering Levels ^{1,2} (tpy)	Type B Triggering Levels ¹ (tpy)	Pollutant	In-house Total Facility Triggering Levels ¹ (tpy)
NO _x	≥2500	≥100	NO _x	≥25
SO ₂	≥2500	≥100	SO ₂	≥25
CO	≥2500	≥1000	CO	≥250
PM ₁₀ /PM _{2.5}	≥250/250	≥100/100	PM/PM ₁₀	≥25/25
VOC	≥250	≥100	VOC	≥25
Pb		≥0.5 (actual)	Pb	≥5
			HAPS	≥5

¹Based on potential emissions

²Type A sources are a subset of Type B sources and are the larger emitting sources by pollutant

The Chevron Hawaii petroleum refinery (in which the three diesel engine pumps are located within) exceeds the Type A triggering levels. Therefore, AERR requirements are applicable.

The Clean Air Branch also requests annual emissions reporting from those facilities that have facility-wide emissions of a single air pollutant exceeding in-house triggering levels or is a covered source. Annual emissions reporting for the facility will be required for in-house recordkeeping purposes since this is a covered source.

Compliance Assurance Monitoring (CAM):

40 CFR Part 64

Applicability of the CAM Rule is determined on a pollutant specific basis for each affected emission unit. Each determination is based upon a series of evaluation criteria. In order for a source to be subject to CAM, each source must:

- Be located at a major source per Title V of the Clean Air Act Amendments of 1990;
- Be subject to federally enforceable applicable requirements;
- Have pre-control device potential emissions that exceed applicable major source thresholds;
- Be fitted with an “active” air pollution control device; and
- Not be subject to certain regulations that specifically exempt it from CAM.

Emission units are any part or activity of a stationary source that emits or has the potential to emit any air pollutant.

CAM is not applicable since pre-control device potential emissions do not exceed applicable major source thresholds.

Synthetic Minor Source:

This source is not a synthetic minor source since it is part of the Chevron Hawaii petroleum refinery which is a major stationary source.

Insignificant Activities:

This project did not propose any insignificant activities.

Alternate Operating Scenarios:

This project did not propose any alternate operating scenarios.

Project Emissions:**Diesel Engine Pump Emissions**

Pollutant	Emission Factor (lb/hp-hr)	175 hp Sand Filter Pump No. 1 Emission Rate (lb/hr)	175 hp Sand Filter Pump No. 1 Emission Rate (8760 hrs/yr) (tpy)	175 hp Sand Filter Pump No. 2 Emission Rate (lb/hr)	175 hp Sand Filter Pump No. 2 Emission Rate (8760 hrs/yr) (tpy)	175 hp Transfer Pump Emission Rate (lb/hr)	175 hp Transfer Pump Emission Rate (8760 hrs/yr) (tpy)	Total Emissions (tpy)
NMHC + NO _x	0.00662 ^a	1.16	5.07	1.16	5.07	1.16	5.07	15.21
NO _x		1.16	5.07	1.16	5.07	1.16	5.07	15.21
SO ₂		0.00195	0.01	0.00195	0.01	0.00195	0.01	0.03
CO	0.00816 ^a	1.43	6.25	1.43	6.25	1.43	6.25	18.75
PM	0.00049 ^a	0.08	0.37	0.08	0.37	0.08	0.37	1.12
PM ₁₀		0.08	0.37	0.08	0.37	0.08	0.37	1.12
PM _{2.5}		0.08	0.37	0.08	0.37	0.08	0.37	1.12
VOC		1.32	5.76	1.32	5.76	1.32	5.76	17.28
CO ₂ e		230.00	1007.40	230.00	1007.40	230.00	1007.40	3022.2
Benzene	6.531E-07 ^b	1.31E-04	5.72E-04	1.31E-04	5.72E-04	1.31E-04	5.72E-04	1.72E-03
Toluene	2.863E-07 ^b	5.73E-05	2.51E-04	5.73E-05	2.51E-04	5.73E-05	2.51E-04	7.53E-04
Xylenes	1.995E-07 ^b	3.99E-05	1.75E-04	3.99E-05	1.75E-04	3.99E-05	1.75E-04	5.25E-04
Propylene	1.806E-06 ^b	3.61E-04	1.58E-03	3.61E-04	1.58E-03	3.61E-04	1.58E-03	4.74E-03
1,3 Butadiene	2.737E-08 ^b	5.47E-06	2.40E-05	5.47E-06	2.40E-05	5.47E-06	2.40E-05	7.20E-05
Formaldehyde	8.26E-07 ^b	1.65E-04	7.24E-04	1.65E-04	7.24E-04	1.65E-04	7.24E-04	2.17E-03
Acetaldehyde	5.369E-07 ^b	1.07E-04	4.70E-04	1.07E-04	4.70E-04	1.07E-04	4.70E-04	1.41E-03
Acrolin	6.475E-08 ^b	1.30E-05	5.67E-05	1.30E-05	5.67E-05	1.30E-05	5.67E-05	1.70E-04
PAH Total	1.176E-07 ^b	2.35E-05	1.03E-04	2.35E-05	1.03E-04	2.35E-05	1.03E-04	3.09E-04
Naphthalene	5.936E-08 ^b	1.19E-05	5.20E-05	1.19E-05	5.20E-05	1.19E-05	5.20E-05	1.56E-04

^aBased on EPA Nonroad Diesel Engine Emission Standards for 100 ≤ hp < 175, Tier 3, 2007 – 2011.

^bBased on AP-42 Emission Factors, Table 3.3-2.

Ambient Air Quality Assessment (AAQA):

A modeling analysis was performed by the applicant for the proposed three (3) diesel engine pumps with worst-case stack parameters using EPA's AERMOD model (ver. 15181), AERMET (ver. 15181) with Kalaeloa Airport data, and AERMAP with USGS NED data. AERMOD was run in rural mode. The BPIP model was used to generate appropriate building dimensions for input into AERMOD. Five (5) years (2010–2014) of meteorological data from Kalaeloa Airport was used, with upper air data from Lihue, Kauai.

The receptor grid consisted of three (3) Cartesian grids. The first Cartesian grid extended to approximately 5 km from the fence in all directions. Receptors in this region were spaced at 100 m intervals. The second grid extended to 10 km. Receptor spacing in this region were 250 m. The third grid extended to approximately 15 km with a spacing of 500 m. The grid was designed such that maximum refinery impacts fall within the 100 m spacing of receptors. Receptors were also placed along the fenceline at 50 m intervals.

Compliance with the 1-hr SO₂ standard was based on the 99th percentile (the fourth highest value) of the annual distribution of the daily maximum 1-hr values from the 5-year meteorological dataset. Compliance with the 1-hr NO₂ standard was based upon the 98th percentile (the eighth highest value) of the annual distribution of the daily maximum 1-hr values from the 5-year meteorological dataset. Compliance with the 24-hr PM_{2.5} standard was based upon the highest of the multi-year average of 98th percentile of the annual distribution of 24-hr concentrations. Compliance with the annual PM_{2.5} standard was based on the highest of the multi-year averages of annual concentrations. Compliance with the 24-hr PM₁₀ standard was based on the highest, sixth high concentration from the 5-year meteorological dataset. Compliance with the 3-hr and 24-hr standards were based upon the highest, second high value from each of the five years of meteorology. Compliance with the annual standards were based upon the highest value from the 5-year meteorological dataset. The EPA Tier 2 Ambient Ratio Method values for NO_x to NO₂ conversion of 0.75 for the annual average and 0.80 for the 1-hr average were employed. The results were combined with the CY 2012-2014 DOH Kapolei Monitoring Data (background data) to produce final estimates for comparison with the NAAQS/SAAQS. The ambient air quality assessment showed that the facility will be in compliance with all Federal and State ambient air quality standards.

Stack Parameters

Unit	Stack Height (ft)	Stack Diameter (ft)	Stack Velocity (ft/s)	Stack Temperature (°F)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	SO ₂ (lb/hr)	CO (lb/hr)	NO ₂ (lb/hr)
Sand Filter Pump No. 1	4.0	0.67	31.1	809	0.08	0.08	0.002	1.43	1.16
Sand Filter Pump No. 2	4.0	0.67	31.1	809	0.08	0.08	0.002	1.43	1.16
Transfer Pump	4.0	0.67	31.1	809	0.08	0.08	0.002	1.43	1.16

Note: The stack parameters are worst-case stack parameters for modeling purposes. Actual stack parameters from the rental diesel engine pumps may be different.

Comparison of Modeled Impacts with NAAQS/SAAQS

Pollutant	Averaging Period	Modeled Result (µg/m ³)	Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	SAAQS (µg/m ³)	Percent of SAAQS (%)
SO ₂	1-hr (99 th)	0.2	31.7 (avg)	31.9	196	16
	3-hr	0.2	50 (max)	50.2	1,300	4
	24-hr	0.1	20 (max)	20.1	365	6
	Annual	0	5 (max)	5.0	80	6
NO ₂	1-hr (98 th)	105.1	42 (avg)	147.1	188	78
	Annual	10.3	7.0 (max)	17.3	75	23
PM ₁₀	24-hr	5.0	40 (max)	45.0	150	30
	Annual	1.0	16 (max)	17.0	50	34
PM _{2.5}	24-hr (98 th)	3.9	12.5 (avg)	16.4	35	47
	Annual	1.0	4.6 (avg)	5.6	12	47
CO	1-hr	192.7	3,092 (max)	3,284.7	10,000	33
	8-hr	102.2	1,450 (max)	1,552.2	5,000	31

Notes:

1. Background data from Kapolei monitoring station (CY 2012-2014).
2. Only the State Ambient Air Quality Standards (SAAQS) are shown as they are the same or more restrictive than the National Ambient Air Quality Standards (NAAQS).

Significant Permit Conditions:

Attachment II, Special Condition No. C.2

2. Fuel Limits

The one (1) black start diesel engine generator and three (3) diesel engine pumps shall be fired only on diesel no. 2 with a maximum sulfur content of 0.0015% by weight and a minimum cetane index of forty (40) or a maximum aromatic content of thirty five (35) volume percent.

Reason: 40 CFR Part 60 Subpart IIII and 40 CFR Subpart ZZZZ requires the use of ultra-low diesel fuel.

Attachment II, Special Condition No. E.6

6. Initial Notification

The permittee shall submit to the Department and U.S. EPA Region 9, an initial notification of applicability within 120 days after initial startup of the one (1) black start diesel engine generator and the three (3) diesel engine pumps. The notification shall include the information in 40 CFR §63.9(b)(2)(i) through (v), and a statement that the one (1) black start diesel engine generator and the three (3) diesel engine pumps have no additional requirements and an explanation of the basis of the exclusion.

Reason: 40 CFR Part 63 Subpart ZZZZ requires an initial notification, although 40 CFR Part 60 Subpart IIII does not.

Conclusion and Recommendations:

Recommend reissuing CSP No. 0088-03-C to incorporate the significant modification consisting of the three (3) diesel engine pumps. This permit shall supersede CSP No. 0088-03-C issued on September 11, 2014, in its entirety. The emissions from the three (3) diesel engine pumps are minimal. The facility will be in compliance with all Federal and State ambient air quality standards. A 30-day public comment period and 45-day EPA review period are also required.

Reviewer: Darin Lum
Date: September 2, 2016